

# Research Article User Experience Evaluation of Online Registration System at RSUP Surakarta Using the UEQ Method

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Abstract: The rapid advancement of digital technology has transformed healthcare services, including the implementation of online registration systems in hospitals. RSUP Surakarta has operated an online patient registration system since 2021 to reduce wait times and improve service efficiency. However, no formal evaluation has been conducted from the user experience (UX) perspective. This study aims to evaluate the UX of RSUP Surakarta's online registration system using the User Experience Questionnaire (UEQ) method. A descriptive quantitative approach was employed with accidental sampling involving 100 respondents who had used the system in 2024. The UEQ measured six aspects: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty. Results revealed that all aspects scored positively, with Attractiveness (1.920) and Dependability (1.810) reaching the "Excellent" benchmark. Perspicuity (1.863) and Efficiency (1.868) also showed strong scores, while Stimulation (1.693) and Novelty (1.130) scored lower in the "Good" category. These findings suggest that although the system is well-received, improvements are necessary in terms of user engagement and innovation. Enhancing the user interface and enriching system features are recommended to optimize user satisfaction and ensure alignment with patient-centered service standards. This study contributes to digital service evaluation practices in public healthcare by providing empirical insights into user perceptions and expectations.

**Keywords:** user experience; online registration system; healthcare technology; RSUP Surakarta; User Experience Questionnaire (UEQ)

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# 1. Introduction

The integration of digital technology into healthcare services has significantly reshaped the delivery and management of patient-centered care. One of the key transformations is the adoption of online registration systems that enable patients to book medical appointments remotely and avoid lengthy waiting times at hospital counters. As a high-volume tertiary hospital in Central Java, RSUP Surakarta (Surakarta Central General Hospital) began implementing an online registration system in 2021 as part of its commitment to improve operational efficiency and patient satisfaction. However, despite its growing usage, this system has not undergone formal evaluation from the user's perspective, raising concerns about usability, accessibility, and user engagement.

In the era of user-centered digital transformation, evaluating health information systems requires more than technical audits; it must incorporate user experience (UX) as a critical dimension of system performance. UX is defined by the ISO 9241-210 standard as the "user's perceptions and responses resulting from the use and/or anticipated use of a product, system

or service" (ISO, 2010). Numerous studies have demonstrated that positive UX directly correlates with higher user satisfaction, improved task efficiency, and stronger system adoption in the healthcare domain (Thomaschewski et al., 2015; Garret, 2010).

One of the most widely used instruments for UX assessment is the User Experience Questionnaire (UEQ), which measures six key dimensions: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty (Schrepp et al., 2014). The strength of UEQ lies in its standardized structure, validated multidimensional scales, and benchmarking capabilities, allowing researchers to not only assess perceived usability but also compare it with other systems in similar domains (Laugwitz et al., 2008; Schrepp et al., 2017). However, UEQ is not without limitations; some researchers argue that it may over-simplify complex emotional responses and lacks qualitative insights unless combined with interviews or open-ended responses (Rauschenberger et al., 2013).

Several prior studies have successfully applied UEQ to evaluate digital health platforms. For example, Khoirunnisa et al. (2024) assessed the UX of the "Halo Hermina" mobile application and found moderate performance in terms of novelty and stimulation, indicating potential design fatigue. Ulum et al. (2024) employed UEQ to examine the Mobile JKN application and identified gaps in efficiency and attractiveness. Kusumo (2022) utilized the same method to evaluate an academic system, SEKAWAN, demonstrating that even institutional systems with limited user interaction can benefit from rigorous UX evaluation. However, despite these findings, there remains a research gap in applying UEQ to hospital-level administrative systems such as online registration platforms, especially within Indonesian government hospitals that serve large and diverse populations.

This research aims to address this gap by evaluating the UX of the online registration system at RSUP Surakarta using the UEQ method. The study focuses on examining user perceptions across the six UEQ dimensions, identifying performance gaps, and providing actionable recommendations to enhance the system's effectiveness and user satisfaction.

The main contributions of this research are as follows: (1). Empirical Evaluation of a public hospital's online registration system using a standardized UX measurement tool (UEQ); (2). Benchmarking and Comparison of user experience performance with other health-related systems; (3). Identification of Weak UX Areas, particularly stimulation and novelty, to guide design improvement; (4). Practical Recommendations for optimizing hospital digital services through interface and content enhancements.

The remainder of this paper is structured as follows: Section 2 presents a detailed literature review on hospital information systems, UX theory, and UEQ methodology. Section 3 describes the research design, including sampling, instrument, and analytical procedures. Section 4 outlines the findings of the UEQ analysis, followed by a discussion of implications in Section 5. Finally, Section 6 concludes the paper with a summary and future research directions.

#### 2. Preliminaries or Related Work or Literature Review

The rapid digitalization of healthcare services has elevated the importance of user-centered design in the development and evaluation of hospital information systems. As healthcare shifts toward patient-centricity, ensuring a positive user experience (UX) becomes critical for system adoption, efficiency, and quality of care. This section reviews key theoretical foundations of UX and explores prior applications of the User Experience Questionnaire (UEQ) method, which serves as the primary evaluative framework in this study.

#### 2.1. User Experience (UX) in Health Information Systems

User Experience (UX) is a multidimensional concept that captures a user's overall perception and emotional response when interacting with a digital product or service. According to ISO 9241-210:2010, UX encompasses the user's emotions, beliefs, preferences, perceptions, and behaviors that occur before, during, and after use of a system (ISO, 2010). In healthcare, UX is not only associated with usability but also affects trust, patient safety, and service satisfaction (Garret, 2010; Dwi et al., 2022).

Garrett's five-plane UX model—comprising strategy, scope, structure, skeleton, and surface—offers a structured way to conceptualize how digital health interfaces should be developed (Garrett, 2010). In hospital contexts, this means that from registration to treatment stages, all digital touchpoints should reflect patient needs, be intuitive to use, and deliver seamless interactions. Research has shown that UX plays a pivotal role in hospital information systems (HIS) adoption. Systems that ignore UX often suffer from poor engagement and increased cognitive workload for both patients and staff (Yudarmawan et al., 2020; Kirom et al., 2022). Moreover, the digital divide—particularly among elderly or less tech-savvy users—may hinder the effectiveness of online registration if not properly addressed through user-friendly design (Refanus et al., 2022).

To systematically evaluate UX in healthcare applications, several instruments have been developed, such as the System Usability Scale (SUS), Heuristic Evaluation, and User Experience Questionnaire (UEQ). Among these, UEQ offers a more comprehensive and standardized tool that measures not just usability but also emotional and aesthetic aspects of user interaction (Schrepp et al., 2014).

#### 2.2. Prior Applications of the User Experience Questionnaire (UEQ) in Healthcare

The User Experience Questionnaire (UEQ), developed by Laugwitz, Schrepp, and Held (2008), has been widely adopted across domains for evaluating software products. It measures six dimensions of UX: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty—categorized into pragmatic and hedonic qualities (Schrepp et al., 2017). The UEQ is validated, available in multiple languages including Indonesian, and supported by a free analysis tool, making it accessible for large-scale public evaluations.

Recent research has demonstrated the effectiveness of UEQ in healthcare settings. For instance, Khoirunnisa et al. (2024) applied UEQ to evaluate the Halo Hermina mobile application, a platform for outpatient services. Their findings revealed strong performance in Attractiveness and Stimulation, but low scores in Novelty, highlighting limited innovation in interface design.

In a study by Ulum et al. (2024) on the Mobile JKN application, a government-run insurance app, aspects such as Efficiency and Dependability were well rated. However, Stimulation and Novelty again ranked lower, suggesting the system failed to evoke emotional engagement or a sense of innovation. These patterns suggest a broader trend in public sector applications where usability may be sufficient, but hedonic elements are often underdeveloped.

Outside healthcare, Kusumo (2022) evaluated an academic system called SEKAWAN at Universitas Islam Indonesia using UEQ. All six dimensions yielded moderate to high satisfaction, affirming the method's versatility even in administrative platforms with low interaction complexity.

Despite these applications, no prior studies were found evaluating a hospital's online registration system using the UEQ framework, particularly in the context of large-scale government-run hospitals in Indonesia. RSUP Surakarta, as a referral-level hospital with integrated systems (e.g., SIMRS, Vclaim, Mobile JKN), provides a rich environment for studying UX within a multi-platform ecosystem. This study addresses that gap by conducting a comprehensive UEQ-based UX evaluation focused on the administrative access point for patients.

## 3. Proposed Method

This study proposes a structured, user-centric evaluation method for measuring the quality of user experience (UX) in the online registration system at RSUP Surakarta. Rather than utilizing computational models or predictive algorithms, the research emphasizes a descriptive quantitative approach that reflects the perception and satisfaction of real users through validated psychometric instruments. The selected tool, the User Experience Questionnaire (UEQ), provides a practical yet comprehensive means of assessing both pragmatic (task-oriented) and hedonic (emotional) aspects of digital interaction.

The following subsections outline the methodological steps used to conduct this research, from instrument selection to sampling and data analysis.

## 3.1. Step-by-Step Evaluation Approach

The proposed method follows these sequential stages:

Step 1: Identifying Research Context and Instrument Selection

The study focuses on RSUP Surakarta's online registration system, which allows outpatients to book appointments via a web-based interface. To evaluate UX, the User Experience Questionnaire (UEQ) was chosen due to its balanced assessment structure across six dimensions: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty (Schrepp et al., 2014). Each dimension is measured via semantic differential items using a 7-point Likert scale.

• Step 2: Sampling Strategy and Data Collection

The population of interest includes patients who accessed the online registration system in 2024, with a total annual outpatient user base of 65,658 individuals. A sample of 100 respondents was drawn using accidental sampling, allowing the inclusion of participants based on convenience and relevance during their hospital visits. Respondents were asked to complete the Indonesian-translated version of the UEQ.

• Step 3: Questionnaire Administration and UX Dimension Measurement

The printed or digital UEQ form consists of 26 bipolar item pairs (e.g., "annoying – enjoyable", "complicated – easy"). Respondents rate their experience for each item on a scale from -3 (very negative) to +3 (very positive). Items are grouped into the six core dimensions, providing both individual and aggregate insights into user sentiment.

Step 4: Descriptive Statistical Analysis and Benchmarking

Collected data were input into the UEQ Data Analysis Tool, a free software provided by the questionnaire's developers. This tool computes mean scores per dimension and compares them to an international benchmark database that includes more than 200 product evaluations. Score ranges are classified into categories such as "Excellent", "Good", "Above Average", etc., allowing performance appraisal relative to similar systems.

• Step 5: Interpretation and Synthesis of Results

Final interpretation emphasizes the strongest and weakest performing UX dimensions. In the case of RSUP Surakarta, Attractiveness and Dependability scored in the "Excellent" category, while Stimulation and Novelty appeared comparatively weaker. The study synthesizes these findings to provide actionable recommendations for system improvement, such as enhancing visual design and introducing new features.

# 3.2. Summary of Key Activities

- Literature review and gap identification;
- Instrument selection and validation (UEQ);
- Accidental sampling of 100 outpatients at RSUP Surakarta;
- Primary data collection via UEQ-based questionnaire;
- Data entry and analysis using official UEQ tool;
- Benchmarking against global UX performance database;
- Result synthesis and formulation of improvement strategies.

# 4. Results and Discussion

This section presents the findings derived from the UX evaluation of the online registration system at RSUP Surakarta. The analysis was conducted based on responses collected through the User Experience Questionnaire (UEQ) from a sample of 100 users. The discussion integrates both the quantitative results and interpretive insights in light of the initial research objective: to identify system performance across UX dimensions and uncover areas for improvement.

# 4.1. System and Tools Used

The study was carried out using the following:

- Hardware: Data collection was conducted using standard desktop PCs and Androidbased smartphones for real-time patient interaction.
- Software: Microsoft Excel for data tabulation; UEQ Data Analysis Tool (Version 10.0) provided by the official ueq-online.org platform for scoring and benchmark comparison; Google Forms for digitizing and distributing the UEQ to respondents.

## 4.2. Dataset and Demographics

The dataset comprises responses from 100 patients who had utilized the RSUP Surakarta online registration system in 2024. The sampling was conducted using the accidental sampling method, and the population base consisted of 65,658 online users in the hospital outpatient system.

Table 1. Demographic Distribution of Respondents				
Category	Distribution (%)			
Gender (Female/Male)	56% / 44%			
Age (18–30 / 31–50 / >50)	25% / 51% / 24%			
Education (High School / Diploma / Bachelor+)	30% / 41% / 29%			
Frequency of Use $(1x / 2-5x / >5x)$	28% / 53% / 19%			
Source: Primary data collected, 2025.				

Table 1 shows that the majority of users had moderate familiarity with the system, with more than half using it between two to five times.

## 4.3. UX Results Based on UEQ Dimensions

The analysis was performed on the six UEQ dimensions. The results were as follows:

Table 2. Mean Scores by UX Dimension				
UX Dimension	Mean Score	Benchmark Category		
Attractiveness	1.920	Excellent		
Perspicuity	1.863	Good		
Efficiency	1.868	Good		
Dependability	1.810	Excellent		
Stimulation	1.693	Good		
Novelty	1.130	Good		
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Source: Primary data collected, 2025.

Table 2 shows that all dimensions received positive user feedback. The highest scores were recorded in Attractiveness and Dependability.



Figure 1. Comparative Visualization of UEQ Dimension Scores

(a) UX dimension scores above 1.5 indicate strong system perception; (b) Novelty dimension shows the lowest value at 1.130, suggesting room for creative improvement.)

## 4.4. Analysis and Discussion of Results

The Attractiveness score (1.920) suggests that users find the system visually appealing and emotionally satisfying. This implies that the interface design and color scheme of RSUP Surakarta's portal successfully deliver a positive first impression, in line with Garret's UX surface layer theory (Garret, 2010).

Dependability also scored highly (1.810), indicating that users feel the system is reliable and consistent, which aligns with prior findings by Schrepp et al. (2017), who noted that dependable systems tend to improve user trust and reduce registration anxiety.

However, Stimulation (1.693) and particularly Novelty (1.130) received relatively lower scores. These findings are consistent with studies by Khoirunnisa et al. (2024) and Ulum et al. (2024), who found that public-facing systems often lack engaging features and creative design, leading to reduced emotional involvement.

This gap highlights an important insight: while the system is functionally adequate, it may fail to inspire repeated engagement or interest, especially among younger, tech-savvy users who expect richer interactions and personalization.

In contrast, Efficiency (1.868) and Perspicuity (1.863) indicate that users are able to complete tasks quickly and find the interface relatively easy to understand. These findings support the initial hypothesis that digital registration reduces wait time and simplifies the process, validating claims by Wahyuni & Qotimah (2022) regarding digital interface utility in healthcare.

Overall, the results demonstrate that the RSUP Surakarta online registration system performs strongly in terms of core usability (efficiency, clarity, reliability), but requires improvement in emotional engagement and innovative interface elements.

# 4.5. Summary of Key Findings

- Users value reliability and visual design above all other aspects;
- Innovation and engagement are comparatively weak, risking stagnation of user interest;
- The system's overall UX performance is classified as positive and competitive, yet nondifferentiating;
- Benchmarking via UEQ provides clear pathways for targeted improvements in UI/UX design.

## 5. Comparison

To demonstrate the contribution and contextual performance of RSUP Surakarta's online registration system, this section compares the results of the present study with previous evaluations conducted using the User Experience Questionnaire (UEQ) in similar healthcare settings. The comparison includes systems evaluated in both hospital and health insurance applications, offering a well-rounded state-of-the-art perspective.

# 5.1. Benchmarking Against Comparable Systems

Table 3 summarizes the mean UX scores across six dimensions as reported in prior studies, alongside the findings from this research.

		<b>Table 3.</b> Comparative UX Scores across Healthcare Applications			
UX Dimen-	RSUP Surakarta	Halo Hermina App [Khoirunnisa et	Mobile JKN [Ulum et	SEKAWAN UII [Kusumo,	
sion	(2024)	al., 2024]	al., 2024]	2022]	
Attractive-	1 020	1.80	1 22	1.65	
ness	1.920	1.00	1.22	1.05	
Perspicuity	1.863	1.40	1.22	1.74	
Efficiency	1.868	1.70	1.38	1.80	
Dependabil-	1 010	1.60	1 20	1.20	
ity	1.010	1.00	1.29	1.39	
Stimulation	1.693	1.80	1.30	1.30	
Novelty	1.130	1.40	0.78	0.90	

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Source: Primary data collected, 2025.

Table 3 shows that RSUP Surakarta's system outperformed others in 4 out of 6 dimensions, particularly in Attractiveness, Perspicuity, Efficiency, and Dependability.

#### 5.2. Comparative Insight and Interpretation

The table reveals that RSUP Surakarta achieved the highest mean scores in most pragmatic dimensions of UX—namely Attractiveness, Efficiency, and Dependability—when compared to previous evaluations of digital healthcare systems in Indonesia. This reflects a well-structured and reliable system, particularly in terms of interface design and system consistency.

In contrast, the Stimulation and Novelty dimensions remain a common challenge across all systems. Although the Halo Hermina App slightly outperforms in Stimulation (1.80), likely due to its mobile-first interface and integrated features like chatbots and notifications, RSUP Surakarta still shows competitive performance in this area.

The Mobile JKN application, which is operated at a national level, scored lower in most dimensions, suggesting that system complexity and bureaucratic design may negatively impact user experience if not designed intuitively. Meanwhile, SEKAWAN, as an academic system, performed adequately in pragmatic areas but less so in hedonic quality, similar to RSUP Surakarta.

#### 5.3. Research Contribution through Comparative Lens

The results highlight several distinct contributions of this research:

- First UEQ-based evaluation of an online hospital registration system in a large government hospital in Indonesia.
- Demonstrates that public sector digital services—when well-implemented—can exceed private health apps in usability and clarity.
- Validates that efficiency and reliability are strong suits of systems integrated into broader hospital IT ecosystems (SIMRS, VClaim, APM).
- Reinforces a consistent pattern where hedonic UX aspects (Stimulation and Novelty) are less prioritized in public health IT designs and require deliberate design innovation.

In sum, the comparative findings not only validate the usability of RSUP Surakarta's system but also position it as a reference model for public hospital systems aiming to improve digital access services. The insights also emphasize the need for user interface enhancements and engaging design features to meet evolving user expectations.

#### 6. Conclusions

This study evaluated the user experience (UX) of the online registration system at RSUP Surakarta using the User Experience Questionnaire (UEQ) framework. A total of 100 respondents were involved in assessing the system across six UX dimensions: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty.

The main findings reveal that the system achieved excellent performance in Attractiveness (1.920) and Dependability (1.810), while Perspicuity (1.863) and Efficiency (1.868) also scored well within the "Good" benchmark range. These results indicate that the system is visually appealing, reliable, easy to use, and efficient from the user's perspective. However, lower scores in Stimulation (1.693) and particularly Novelty (1.130) suggest that the system lacks elements of emotional engagement and innovative interface features.

The findings align with the research objective to assess system quality based on user perception, supporting the hypothesis that RSUP Surakarta's digital services are functionally strong but need hedonic enhancement. The comparative analysis also positions RSUP Surakarta's system above several other public and private health applications in Indonesia, establishing it as a promising model of digital transformation in the public hospital sector.

This research contributes to the growing body of knowledge on UX evaluation in healthcare systems, particularly in developing countries. It demonstrates how psychometric evaluation tools like UEQ can generate actionable insights for system improvement, ensuring alignment with patient-centered care values.

Nevertheless, the study has limitations. It relies solely on quantitative measures and does not incorporate qualitative insights from open-ended user feedback or in-depth interviews. Future research is encouraged to combine mixed-method approaches to explore the emotional nuances behind user responses. Additionally, long-term UX tracking post-system upgrades could provide richer data on user satisfaction trends over time. In conclusion, while RSUP Surakarta's online registration system is already well-received, enhancing innovation and interactivity remains essential to ensure sustained user engagement and broader adoption in the digital healthcare ecosystem.

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## References

- Anwar, A. H., et al. (2023). Digital health in Southeast Asia: Adoption and UX challenges. JMIR Human Factors, 9(1), e21222. https://doi.org/10.2196/21222
- Budianto, M., & Nugroho, H. (2023). Evaluasi user experience sistem informasi akademik dengan UEQ. Jurnal Pilar Teknologi, 8(1), 75–82.
- Fitriani, D., & Hasan, M. R. (2023). User experience evaluation of hospital kiosk systems using UEQ-S. TELKOMNIKA Telecommunication Computing Electronics and Control, 21(3), 641–649. <u>https://doi.org/10.12928/telkomnika.v21i3.26278</u>
- Garrett, J. J. (2010). The elements of user experience: User-centered design for the web and beyond (2nd ed.). New Riders.
- Khoirunnisa, N., Pramudito, Y., & Yuniarti, R. (2024). Evaluasi UX aplikasi Halo Hermina dengan metode UEQ. Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi), 8(1), 85–92. <u>https://doi.org/10.29207/resti.v8i1.5507</u>
- Kusumo, A. (2022). Evaluasi pengalaman pengguna sistem akademik SEKAWAN Universitas Islam Indonesia menggunakan metode UEQ. Jurnal Informatika Universitas Pamulang, 7(3), 121–130.
- Munari, B. R., & da Silva, J. L. (2019). Usability evaluation of e-health systems using heuristic methods and UEQ. Procedia Computer Science, 160, 251–258. <u>https://doi.org/10.1016/j.procs.2019.11.072</u>
- Nugroho, T. A. (2023). Evaluasi pengalaman pengguna aplikasi e-Puskesmas menggunakan User Experience Questionnaire (UEQ). Jurnal Informatika Medis, 2(1), 14–22.
- Nurhayati, S., & Mulyadi, I. (2023). Analisis persepsi pengguna terhadap UI/UX sistem layanan kesehatan digital. Jurnal Teknologi Informasi dan Ilmu Komputer (JTIIK), 10(2), 101–109.
- Preece, J., Rogers, Y., & Sharp, H. (2019). Interaction design: Beyond human-computer interaction (5th ed.). Wiley.
- Priyambodo, D. (2021). Evaluasi UX website akademik menggunakan UEQ. Jurnal Teknologi dan Sistem Komputer, 9(3), 151–158.
- Putri, E. M., & Setiawan, D. (2023). Analisis UX sistem pendaftaran online dengan UEQ di RSUD Ciamis. Jurnal SIMETRIS, 11(2), 137–144.
- Rizal, N. R., & Hartati, R. (2022). Evaluasi UX aplikasi sistem antrian pasien menggunakan UEQ. Jurnal Informatika: Jurnal Pengembangan IT, 6(2), 38-44.
- Schrepp, M., Hinderks, A., & Thomaschewski, J. (2017). Construction of a benchmark for the user experience questionnaire (UEQ). International Journal of Interactive Multimedia and Artificial Intelligence, 4(4), 40–44. <u>https://doi.org/10.9781/ijimai.2017.445</u>
- Schrepp, M., Hinderks, A., & Thomaschewski, J. (2021). Design and evaluation of a short version of the user experience questionnaire (UEQ-S). International Journal of Interactive Multimedia and Artificial Intelligence, 6(3), 103–108. <u>https://doi.org/10.9781/ijimai.2021.05.002</u>

Suhendra, H. (2022). Pengaruh user experience terhadap kepuasan dan loyalitas pengguna sistem informasi kesehatan. Jurnal Sistem Informasi dan Teknologi, 13(2), 101–108.

- Tomaszewski, M. D., et al. (2021). The effect of UX on eHealth services acceptance in hospitals. International Journal of Medical Informatics, 146, 104332. <u>https://doi.org/10.1016/j.ijmedinf.2020.104332</u>
- Ulum, A., Nurhidayati, F., & Fadlillah, H. (2024). User experience evaluation of Mobile JKN using UEQ method. Jurnal Teknologi dan Sistem Komputer, 12(1), 45–52. <u>https://doi.org/10.14710/jtsiskom.12.1.45-52</u>
- Wahyuni, D., & Qotimah, L. (2022). Analisis kepuasan pengguna sistem informasi pendaftaran online menggunakan metode UEQ. Jurnal Ilmiah Informatika KOMPUTA, 11(1), 12–19. <u>https://doi.org/10.37610/komputa.v11i1.450</u>
- Widodo, E., & Ningsih, S. (2022). Comparative study of UX between public and private health apps in Indonesia. Jurnal Rekayasa Sistem dan Teknologi Informasi, 7(2), 45–53.